

and repairs without removal from the line.

(h) Valve discs shall be guided by a ribbed cage or other suitable means to prevent binding, and to insure proper seating. Where valve stems are guided by bushings suitably designed to prevent binding and to insure proper seating, the valves need not be fitted with ribbed cages.

(i) The disc shall close tight against the valve seat by metal to metal contact, however, resilient seating seals may be provided if the design is such that the disc closes tight against the seat in case the seals are destroyed or in case they carry away.

(j) Pressure-vacuum relief valves for venting cargo tanks shall be of not less than 2½ inches nominal pipe size.

(k) Bodies of valves shall be designed to withstand a hydrostatic pressure of at least 125 pounds per square inch without rupturing or showing permanent distortion.

(l) The valve discs may be solid or made hollow so that weight material may be added to vary the lifting pressure. If hollow discs are employed, a watertight bolted cover shall be fitted to encase the weight material. The pressure at which the discs open shall not exceed 120 percent of the set pressure.

(m) The free area through the valve seats at maximum lift shall not be less than the cross-sectional area of the valve inlet connection.

(n) Double flame screens of 20×20 corrosion-resistant wire mesh with a ½-inch corrosion-resistant separator on a single screen of 30×30 corrosion-resistant wire mesh shall be fitted on all openings to atmosphere. The net free area through the flame screens shall not be less than 1½ times the cross-sectional area of the vent inlet from the cargo tanks.

(o) Valve bodies may have screwed or flanged pipe connections, or such types of connections as may be approved by the Commandant. If flanged, the thickness and drilling shall comply with USA standards for 150-pound bronze flanged fittings.

(p) Where design of valve does not permit complete drainage of condensate to attached cargo tank or vent line, the valve body shall be fitted with

a plugged drain opening on the side of the atmospheric outlet of not less than ½ inch pipe size.

(q) Relief pressure adjusting mechanisms shall be permanently secured by means of lockwires, locknuts, or other acceptable means.

[CGFR 50-9, 15 FR 1680, Mar. 25, 1950, as amended by CGFR 68-82, 33 FR 18907, Dec. 18, 1968; CGD 88-032, 56 FR 35827, July 29, 1991; CGD 95-072, 60 FR 50467, Sept. 29, 1995; CGD 96-041, 61 FR 50734, Sept. 27, 1996]

**§ 162.017-4 Inspections and testing.**

Pressure-vacuum relief valves may be inspected and tested at the plant of the manufacturer. An inspector may conduct such tests and examinations as may be necessary to determine compliance with this specification.

[56 FR 35827, July 29, 1991]

**§ 162.017-5 Marking.**

(a) Each valve shall be legibly marked with the style, type or other designation of the manufacturer, the size, pressure and vacuum setting and name or registered trademark of the manufacturer and Coast Guard approval number. The minimum wording for showing the approval number shall be "USCG/162.017/\* \*\*" or "USCG 162.017-\* \*\*".

(b) [Reserved]

[CGFR 68-82, 33 FR 18908, Dec. 18, 1968]

**§ 162.017-6 Procedure for approval.**

(a) *General.* Pressure-vacuum relief valves intended for use on tank vessels must be approved for such use by the Commandant (G-MSE), U.S. Coast Guard, Washington, DC 20593-0001.

(b) *Drawings and specifications.* Manufacturers desiring approval of a new design or type of pressure-vacuum relief valve shall submit drawings in quadruplicate showing the design of the valve, the sizes for which approval is requested, method of operation, thickness and material specification of component parts, diameter of seat opening and lift of discs, mesh and size of wire of flame screens.

(c) *Pre-approval tests.* Before approval is granted, the manufacturer shall have

\* \*\*Number to be assigned by the Commandant.

tests conducted, or submit evidence that such tests have been conducted, by the Underwriters' Laboratories, the Factory Mutual Laboratories, or by a properly supervised and inspected test laboratory acceptable to the Commandant (G-MSE), relative to determining the lift, relieving pressure and vacuum, and flow capacity of a representative sample of the pressure-vacuum relief valve in each size for which approval is desired. Test reports including flow capacity curves must be submitted to the Commandant (G-MSE).

[56 FR 35827, July 29, 1991, as amended by CGD 95-072, 60 FR 50467, Sept. 29, 1995; CGD 96-041, 61 FR 50734, Sept. 27, 1996]

### Subpart 162.018—Safety Relief Valves, Liquefied Compressed Gas

#### § 162.018-1 Applicable specifications, and referenced material.

(a) There are no other specifications applicable to this subpart except as noted in this subpart.

(b) The following referenced material from industry standards of the issue in effect on the date safety relief valves are manufactured shall form a part of the regulations of this subpart (see §§ 2.75-17 through 2.75-19 of Subchapter A (Procedures Applicable to the Public) and Subpart 50.15 of Subchapter F (Marine Engineering) of this chapter):

(1) ASME (American Society of Mechanical Engineers) Code (see § 50.15-5 of subchapter F (Marine Engineering) of this chapter): The following paragraph from section VIII of the ASME Code:

(i) UG-131, flow rating of valves, see § 162.018-7(a).

(2) CGA (Compressed Gas Association) standard: The following standard of the Compressed Gas Association (see § 50.15-20(a) of Subchapter F (Marine Engineering) of this chapter):

(i) S-1.2.5.2, Flow test data for safety and relief valves for use on pressure vessels, see § 162.018-7(a).

(c) A copy of this specification and the referenced material listed in this section, if used, shall be kept on file by the manufacturer, together with the approved plans, specifications, and cer-

tificate of approval. It is the manufacturer's responsibility to have the latest issue, including addenda and changes, of the referenced material on hand when manufacturing equipment under this subpart.

(1) The ASME Code may be obtained from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017.

(2) The CGA standard may be obtained from the Compressed Gas Association, 500 Fifth Avenue, New York, N.Y. 10036.

[CGFR 68-82, 33 FR 18908, Dec. 18, 1968]

#### § 162.018-2 Scope.

(a) This specification covers requirements for the design, construction and testing of safety relief valves intended for use on unfired pressure vessels containing liquefied compressed gases installed on merchant vessels subject to inspection by the Coast Guard.

(b) [Reserved]

[CGFR 52-43, 17 FR 9540, Oct. 18, 1952]

#### § 162.018-3 Materials.

(a) The materials used in the manufacture of safety relief valves shall conform to the applicable requirements of subchapter F (Marine Engineering) of this chapter, except as otherwise specified in this subpart, and shall be resistant to the corrosive or other action of the liquefied compressed gas in the liquid or gas phase.

(b) All pressure containing external parts of valves must be constructed of materials melting above 1700 °F. for liquefied flammable gas service. Consideration of lower melting materials for internal pressure-containing parts will be given if their use provides significant improvement to the general operation of the valve. Flange gaskets shall be metal or spiral wound asbestos.

(c) Nonferrous materials shall not be used in the construction of valves for anhydrous ammonia or other service where susceptible to attack by the loading.

(d) The seats and disks shall be of suitable corrosion resistant material. Seats and disks of cast iron or malleable iron shall not be used. Springs